

Monthly Progress Report
Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)
June 2001

This report summarizes Los Alamos National Laboratory (LANL) activities completed during June of fiscal year (FY) 2001 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]), which was submitted to the New Mexico Environment Department-Hazardous Waste Bureau [NMED-HWB] on 9/30/98, and approved by NMED-HWB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

High Performing Team (HPT) Activities – The 260 HPT and the ecorisk HPT held a joint meeting on June 4, 2001.

LANL representatives provided an update on May activities including the hydrogeologic studies, the ecorisk pilot, the bench and pilot studies, and the Interim Measure (IM) investigations. LANL noted that the CDV-R-37-2 deep groundwater well will probably move up in the drilling schedule. Additional details are provided below in the sections of this monthly report covering these studies.

The ecorisk team discussed the results of the reconnaissance trapping. HWB representatives expressed some concerns about the representativeness of Pajarito Canyon due to its higher level of burning compared to Canon de Valle, which appears to have resulted in a lower capture rate in the former canyon.

LANL discussed the aquatic ecosystem ecorisk study design. Assessment endpoints were identified, screening results were reviewed and a conceptual study design was discussed. It was suggested that two activities are necessary to adequately constrain the ecological risk in the aquatic portion of Canon de Valle: 1) a synoptic survey of benthic macroinvertebrates; and 2) bioassay studies on sediments. A synoptic survey is currently being completed by DOE oversight bureau personnel that should be acceptable for decision making. In addition, LANL group ESH-18 may be performing surveys of benthic macroinvertebrates to address effects of the Cerro Grande fire. Several possible test organisms for sediment bioassay were discussed, the most relevant organism appears to be *Chironomus tentans*, which is a species of midge. LANL proposed that three study sites in Canon de Valle and one reference site be investigated. Investigations would include 10-day tests for survival and growth (eight replicates, laboratory controls), and sediment analyses for HE and metals. The key outstanding issue is identification of an acceptable reference canyon for the study. DOE-OB personnel suggested that Starmer's gulch may be the best reference site. HWB and DOE-OB personnel expressed concern that the pathway to bats and swallows may need to be addressed. HWB personnel will provide comments by June 15, 2001. These comments have been provided.

LANL personnel reviewed recent information on RDX environmental breakdown products. The principal large-molecular products that can be analyzed in the laboratory are MNX, DNX, and TNX, which are suspected to be carcinogens. Most of the moderate sized molecular products appear to be transient in the environment and are difficult, if not impossible, to quantitatively analyze at this time. Mineralized products include CO₂, CH₄, N₂, NO₂, and nitrite. LANL is currently trying to arrange analytical laboratories that can analyze MNX, DNX, and TNX.

HWB personnel handed out a schedule of TA-16-260 activities for the HPT to review.

LANL personnel discussed the proposed location of the CDV-R-37-2 well outside the gate at TA-37. HWB personnel agreed that this appeared to be an acceptable location for this well.

The next HPT meeting is scheduled for July 10, 2001. Agenda items may include review of the HPT matrix, data review, ecological risk studies, and a discussion of the RFI and CMS Report formats.

RCRA Facility Investigation (RFI) Report and CMS Plan– No new activities occurred during this reporting period.

Best Management Practices (BMPs)– BMPs are inspected quarterly and following significant precipitation events. IM fieldwork, including site restoration, is complete except for finalization of the zero-discharge dam. No BMP repairs were required this month.

CMS Hydrogeologic Investigations–CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling program includes collecting samples at Martin and Burning Ground spring every other day for stable isotopes. Quarterly sampling was started in June 2001, although the majority of this sampling will be completed in July 2001.

The wells, both alluvial and deep, were checked for both presence and level of water. All five alluvial wells in Canon de Valle contained water. The uppermost alluvial well in Martin spring canyon is dry. Fish-ladder seep, the waterfall at Fishladder canyon, and the Canon de Valle/Water Canyon confluence are all wet; however, the 90s Line Pond remains dry. A suite of flow-integrated samples was collected from the TA-16 springs.

Data analysis of the spring, surface water and well data was completed. Particular focus was on HE temporal dynamics and on HE variations between conceptual model units, such as springs, alluvial waters and vadose zone waters. Field data from the alluvial water dynamics study was reviewed.

Three samples from precipitation events were collected and archived for analysis during this reporting period.

Ecological Risk Pilot–

The sampling effort for small mammals in Canon de Valle and Pajarito Canyon was continued. Additional deer mice were captured in Pajarito Canyon. The overall capture rate was relatively low, possibly due to the combined effects of last year's drought and the Cerro Grande fire. Hantavirus screening was completed and 12 individual deermice were submitted for laboratory analysis. Five individuals from Canon de Valle tested positive for hantavirus. A study design for the aquatic ecosystem was completed.

CMS Bench and Pilot Studies–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). The LANL portion of this study has been completed.
3. At Pantex, a study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of HE-contaminated soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment. The LANL portion of this study has been completed.
5. A study of HE composting. Amendments appropriate to northern New Mexico were tested on both clean and contaminated soils. The LANL portion of this study has been completed.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle. A preliminary study has been completed and further investigations are planned for late summer of 2001.
7. Phytoremediation studies in Cañon de Valle. Native plants are being evaluated for their ability to remove HE from surface waters. Preliminary results suggest that low levels of phytoremediation are occurring in the Burning Ground spring area. Screening sampling in Burning Ground spring was completed in June 2001.
8. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination at Pantex.

The Stormwater Management System units were installed in Martin spring canyon. These will be sampled during the upcoming quarterly sampling.

Interim Measure (IM) –

Activities at the TA-16-260 IM were limited. Housekeeping activities were performed. Site restoration activities are complete except for capping of the zero discharge dam.

Treatment Storage and Disposal (TSD) facilities were investigated. Laboratory samples of the wastes stored in the rollofts were completed to support disposal at a TSD.

Public and Stakeholder Involvement– None

Percentage of CMS Completed

LANL estimates 77 % of the CMS has been completed to date. Note that this percentage does not reflect the deep wells that will be drilled per the CMS plan addendum.

Problems Encountered/Actions to Rectify Problems

General Problem (1) The Cerro Grande fire has severely impacted the 260 RFI/CMS activities. These problems have been discussed in detail in previous monthly reports.

Action to Rectify General Problem (1): LANL will work closely with NMED through the HPT to mitigate the effects of the Cerro Grande fire. Effects of the fire on the monitoring data in Canon de Valle are being addressed.

CMS Hydrogeologic Investigations

Problem (1): Questions relating to the quality of data from well R-25 remains a concern to the TA-16-260 team.

Action to Rectify Problem (1): LANL will evaluate the data from the quarterly sampling of the R-25 well to evaluate its reliability.

CMS Bench and Pilot Studies

None.

IM

None.

Key Personnel Issues

The HEPS team leader is now acting as the Remedial Actions Focus area (RAFA) leader.

Projected Work for July 2001

RFI Report and CMS Plan

- No work is scheduled for this month.

BMPs

- Inspection of existing BMPs following significant precipitation events will continue.

CMS Hydrogeologic Investigations

- Maintenance of autosamplers
- Checking for levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated autosamplers
- Continued precipitation monitoring and sampling for stable isotopes.
- Geophysical investigations
- Data analysis
- Quarterly sampling

Ecological Risk Pilot

- Finalization of the study design for the aquatic ecosystem in Canon de Valle.

CMS Bench and Pilot Studies

- Sampling of Stormwater Management units

IM

- Data analysis and writing of IM Report
- Waste management, evaluation of waste data

Public and Stakeholder Involvement

None planned